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ENERGY STAR® BUILDINGS℠

Update

The Evolution of ENERGY STAR

ENERGY STAR has become the way for businesses, government entities, and organizations to increase their profitability and value, by uncovering the link between energy, environmental, and financial performance.

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ENERGY STAR IN REVIEW

The Evolution of ENERGY STAR

It's been almost a decade since the U.S. Environmental Protection Agency launched ENERGY STAR in 1991 with the Green Lights program. Over the years, ENERGY STAR has become the way for businesses, government entities and organizations to increase their profitability and value, by uncovering the link between energy, environmental, and financial performance. With advances in everything from information technology to lighting and building technologies, ENERGY STAR is keeping stride and evolving to meet the needs of commercial and industrial energy users in these rapidly changing times. Here's a look at where we've been and where ENERGY STAR is going in the years to come.

Recognizing energy efficiency's potential for reducing fossil fuel consumption, greenhouse gas emissions, and ultimately, global warming, EPA established the Green Lights program in 1991 to encourage businesses and government entities to install energy-efficient lighting technologies in their buildings. By establishing itself as an environmental partner rather than a governing body handing down regulations, EPA focused on developing a voluntary partnership that would demonstrate the value of energy efficiency and emphasize the importance of ongoing cooperation and continuous improvement.

Green Lights focused on replacing old lighting fixtures with more energy-efficient alternatives whenever and wherever upgrades were determined to be cost-effective. From the beginning, the marriage of energy performance, financial performance, and environmental performance drove the development of EPA's strategy for illustrating the inherent value in energy efficiency.

With several years of experience and success under its belt, in 1995 EPA expanded ENERGY STAR to include buildings. Beginning in 1999, buildings that operated in the top twenty-fifth percentile of similar buildings in their region could earn the ENERGY STAR label. ENERGY STAR established a simple, five-stage approach to strategic energy management for buildings, which utilized a systematic upgrade strategy to minimize energy waste, maximize energy savings, and include upgrades to heating and cooling systems, fan systems, roofs and windows. Working with energy service providers across the U.S., EPA facilitated partnerships between companies and agencies interested in improving their lighting, heating, ventilating, and air-conditioning systems and the companies that could provide those services. The ENERGY STAR label gave building owners the opportunity to certify their entire buildings as meeting ENERGY STAR specifications for energy performance and indoor air quality with a plaque posted on the actual buildings.

While ENERGY STAR and Green Lights were touting energy efficiency to the commercial and industrial world, ENERGY STAR was simultaneously taking the energy efficiency message to U.S. consumers. Through a collaboration between EPA, DOE, and many manufacturers and retailers, ENERGY STAR used the ENERGY STAR label to make energy-efficient products easily recognizable, while raising awareness about the environmental and economic benefits. Over time, the number of products and participating manufacturers has grown rapidly, and

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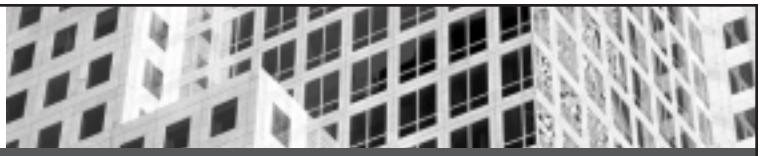

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now dozens of products, from refrigerators and dishwashers to computers and DVD players bear the ENERGY STAR label.

As more products joined the ENERGY STAR program, new lines emerged to promote them—homes, windows, HVAC, etc.—leading to variations on the ENERGY STAR logo and a diversity of messages and materials to communicate with the different audiences of partners, businesses, and consumers. Missing from the ENERGY STAR strategy was the reinforcement of the ENERGY STAR brand as a whole. With the goal of integrating the message of superior energy performance in buildings with that message in labeled products, ENERGY STAR is pulling the messages from Green Lights, Climate Wise, and the different ENERGY STAR line under one umbrella, the ENERGY STAR brand.

What does this mean for you? It means that it will be much easier for the public to recognize your ENERGY STAR labeled buildings, products, and homes. In the coming months, you'll begin seeing new ENERGY STAR materials featuring the ENERGY STAR logo with its new brand message—"Money Isn't All You're Saving." From labeled buildings to labeled products and homes, ENERGY STAR will have a consistent look, making it easier for businesses and consumers alike to recognize ENERGY STAR as the way to help prevent pollution while saving money. A totally revamped website will make finding energy efficiency information faster and easier. New online tools will help everyone from the consumer to the plant manager to the CEO find the most relevant information.

At the dawn of a new era, ENERGY STAR is poised to leap forward into the new century, strengthening its position as a government partner and stakeholder and proving to the world that energy efficiency is a viable way for joining financial performance and environmental responsibility.

THE 2001 ENERGY STAR AWARDS:
Are You Bound for Stardom?

It's time for you to apply for the annual ENERGY STAR awards! Applications are due on January 5, 2001, and no extensions will be granted — so be sure to process your application on time. It is easy to apply: you can access the application at the ENERGY STAR website, www.energystar.gov, or call the ENERGY STAR hotline at 1-888-STAR-YES (1-888-782-7937).

The ENERGY STAR awards will be presented during a ceremony in Washington, DC on March 20, 2001. In addition to these awards, EPA is offering two special category awards this year: the ENERGY STAR Excellence award and the Excellence in Consumer Education award.

All ENERGY STAR awards honor smart businesses and organizations that recognize the link between energy, financial, and environmental performance. These businesses and organizations are willing to reach for the stars through their commitment to leveraging the ENERGY STAR advantage of being more competitive, fiscally responsible, profitable, and valuable.

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Companies are eligible to apply for the ENERGY STAR awards if they are currently participating in the ENERGY STAR or Climate Wise partnerships.

The ENERGY STAR awards specifically acknowledge public education, and promotional efforts to raise awareness of improved energy performance.

The ENERGY STAR Excellence award recognizes the ENERGY STAR partner who isn't simply committed to making energy efficiency building upgrades, but also manufactures energy-efficient products and also purchases and uses energy-efficient products.

The Excellence in Consumer Education award recognizes the best ENERGY STAR 2000 educational campaign developed by an ENERGY STAR partner or other market transformation group. The campaign will have focussed on informing employees, customers, businesses, and/or consumers of the benefits of "making it easy to make a difference with ENERGY STAR.

Don't miss out on your chance for stardom and to be recognized for your hard work and dedication — apply today!

VERIZON

An ENERGY STAR Leader in Telecommunications

Verizon Communications, a leader in the telecommunications industry, is now becoming a leader in ENERGY STAR. Verizon, formed by the merger of Bell Atlantic and GTE, is embracing the ENERGY STAR portfolio manager, as well as the other resources and tools available to partners.

Verizon Communications is one of the world's leading providers of high-growth communications services. Verizon companies are the largest providers of wireline and wireless communications in the United States, serving the equivalent of nearly 95 million access lines and 25 million wireless customers. A Fortune 10 company with more than $60 billion in 1999 revenues and more than 260,000 employees, Verizon's global presence extends to 40 nations through operations and investments in the Americas, Europe, Asia, and the Pacific.

The portfolio manager allows Verizon to compare their facilities' energy performance to similar buildings around the country, regardless of location. When a facility scores in the top 25 percent, it is recognized as a top performer by receiving the ENERGY STAR label. But more importantly, Verizon is discovering opportunities to capitalize on additional energy and cost savings. Verizon has benchmarked approximately 25 percent of their administrative buildings. As improvements are made in building performance, new benchmarking scores can be reviewed to measure their success across their entire portfolio of facilities.

Verizon views the ENERGY STAR label as a great accomplishment. To date, approximately 200 office buildings nation-wide have received the ENERGY STAR label. The organization is striving to qualify for the ENERGY STAR label because Verizon is committed to a healthy environment and the tool can heighten internal awareness of energy performance and spur competition between facilities. This, in turn, will lead to lower operating costs and better financial performance for the company.

"We are thrilled to be an ENERGY STAR partner. The ENERGY STAR portfolio manager is helping us identify our administrative buildings with the most energy waste so we can attack those first," says Rod Sluyter, director of Verizon's Energy Team. "Not only does the tool help Verizon achieve its goal of using the least amount of energy necessary, it can help other companies as well. With the help of ENERGY STAR, Verizon is able to make even more of an impact on pollution reduction as well as financial responsibility."

Verizon is looking to incorporate ENERGY STAR into their already very progressive energy management strategies. Verizon's Energy Board of Directors meets quarterly to address energy issues with a variety of representatives from many sides of energy issues – financial, environmental, supply, facilities, communications, O&M, and others. Verizon is also diligently tracking their energy data with the assistance of Florida Power & Light's EDM Pro.com.

ARDEN REALTY, INC.

Commercial Real Estate Partner of the Year

Arden Realty, Inc., the largest landlord of office buildings in Southern California, currently enjoys an overall leasing rate in excess of 95 percent, and an average retention rate of 75 percent, due partly to the energy performance of its buildings.

Since joining ENERGY STAR in 1999, the organization has benchmarked the energy performance of 120 office properties (84 percent of its portfolio) using the Environmental Protection Agency's (EPA) national performance rating scale. Sixty buildings have qualified for the distinction of the ENERGY STAR label, designating them among the most energy-efficient buildings in the country. Earlier this year, Arden Realty was named Commercial Real Estate Partner of the Year for its outstanding achievements in strategic energy management. Energy is typically the single largest operating expense for a commercial office building. Improving energy performance lowers operating costs, increases net operating income, and enhances asset and shareholder value. In addition, improved energy performance in buildings can provide a more comfortable work environment; thus resulting in higher tenant attraction, retention, and occupancy rates.

Arden Realty understands the added value of having ENERGY STAR labeled buildings. "Arden's high performance buildings deliver energy-efficient space at a lower cost. This results in a lower cost structure, fewer hydrocarbons in the atmosphere, and lower pass-through costs to our tenants," says Robert Accomando, first vice president, Arden Realty, Inc. "With ENERGY STAR, Arden is making its portfolio even more competitive, profitable, and environmentally friendly." Arden Realty further demonstrates its commitment to ENERGY STAR by using EPA's QuikScope software. QuickScope, a resource available to ENERGY STAR partners, is a powerful business tool that allocates the costs and benefits of energy efficiency upgrades between tenants and owners, and models a variety of leasing scenarios to help building owners increase asset and shareholder value. For more information about Arden Realty, Inc., visit www.ardenrealty.com.

BUILDING FOR ENERGY PERFORMANCE

Teaming to Build a Better Future

The ENERGY STAR program is a compelling example of the power of teamwork. Service and product providers that promote ENERGY STAR are companies which provide the services or products to enable their clients, ENERGY STAR partners, to be more competitive, profitable, and valuable because of the link between energy, financial, and environmental performance. Service and product providers work with ENERGY STAR partners to plan and implement upgrades in order to improve a building's energy performance, which are financially and environmentally sound. With this improved energy performance, ENERGY STAR partners experience not only a larger profit margin or budget surplus, but also improved occupant comfort, increase property values, and significantly reduce the emission of harmful air pollutants. ENERGY STAR is the way to uncover the link between energy, financial, and environmental performance for your company, and the service and product providers can help to make the process easy. The following is a recent success story that illustrates the benefits of teamwork between ENERGY STAR partners and service and product providers.

Metal halide fixtures, installed by Creative Lighting Management Services, improved lighting quality in J.M. Smucker Company's distribution warehouses.

Creative Lighting Management Services and J.M. Smucker Company

While reading the ENERGY STAR Update, Creative Lighting Management Services, a service and product provider located in Westlake, Ohio learned that the J.M. Smucker Company joined the ENERGY STAR program. Creative Lighting contacted Smucker and offered to evaluate the company's present lighting system and present the optimal lighting option for the warehouses. After examining Smucker's facilities, Creative Lighting determined that replacing the fluorescent VHO lamps with metal halide fixtures offered the best cost-effective solution for improving lighting quality.

At the J.M. Smucker Company's distribution warehouses in Orrville, Ohio, proper lighting is critical because workers need to be able to read the shipping labels on the inventory of large boxes stacked on top of each other. As the quantity of products moving through the warehouses increased, Smucker realized that the fluorescent VHO fixtures it was using to illuminate the facilities were not providing optimum lighting. The company had a growing interest in improving the lighting quality, and, having recently joined the ENERGY STAR program, Smucker also was

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interested in exploring the financial opportunities afforded by improving energy performance with ENERGY STAR.

After the upgrades were completed, the lighting clarity and quality improved significantly in Smucker's warehouses, even with a 22 percent reduction in the number of fixtures. The upgrades led to noticeable improvements in shipping efficiency and employee satisfaction. As a result of this success, Smucker plans to continue its program with Creative Lighting by implementing lighting upgrades at its receiving warehouses in the near future.

Smucker anticipates a 23 percent rate of return on its lighting investments, evidence that improved energy performance means improved financial performance.

"Timeliness, quality, and cost-control are critical in any project, and Creative Lighting Management Services excelled at all three," says Clive Riddiford, manager of construction and procurement engineering for the J.M. Smucker Company. "All of our employees were extremely pleased with the outcome of this project."

Do you have an energy performance success story that involves a service and product provider and an ENERGY STAR partner? E-mail your stories to asapdirectory@epa.gov. For more information about service and product providers that promote ENERGY STAR, visit the website at www.epa.gov/asap.

OFFICE SECTOR

Improving the Bottom Line

The ENERGY STAR label represents a facility's superior energy performance. Over 400 buildings have achieved the ENERGY STAR label and many more are in the process of benchmarking their facilities. Achieving this status is advantageous for companies as they strive to lower operating costs. In addition to cost savings, energy efficiency upgrades result in increased net operating margins and organizational value. Upgrades also result in a more pleasant and comfortable work environment. Studies suggest that this can contribute to higher worker productivity.[1]

Research indicates that there is a strong financial motivator to support increased energy efficiency in buildings. A study that analyzed over 300 of the 500 companies on the Standards and Poor's Index suggests that environmental projects and initiatives had a direct effect on the view of investors as to the level of risk associated with a company. This in turn affected the value of the company in the market. The reduced risk due to environmental efforts had a positive effect on an organization's bottom line.[2]

Energy efficiency improvements provide a substantial way to increase a company's profit margin. By developing a new profit center for energy savings, investments in energy efficiency projects become more imperative. EPA's ENERGY STAR program can assist organizations in identifying cost-effective opportunities to reduce their energy consumption and return more dollars to their bottom line.

The energy cost percentage is the percentage of total costs comprised by the total energy costs. For example, if a company has a 10 percent profit margin and energy cost is five percent of total operating costs, the company can increase its profit margin percentage by 16 percent. This calculation is based on energy cost reduction of 35 percent. The profit center makes it easy to determine the percentage increase of a company's profit margin that results from energy efficiency upgrades.[3]

Partners across the country are utilizing the ENERGY STAR tools to improve their buildings' energy efficiency and implement best practices for their energy management systems. Partners receive software and support to help them achieve the highest levels of efficiency in their buildings' operations. The ENERGY STAR program assists partners by providing various tools including:

- ENERGY STAR portfolio manager
- One–2–Five™ Energy Management Diagnostic
- QuikScope

Portfolio manager is EPA's new Internet-based web tool for managing your organization's approach to reducing building energy costs. It is free, easy to use, confidential, and can be accessed from www.epa.gov/buildings/label. Portfolio manager catalogs the energy use and characteristics of your buildings, allowing you to baseline your energy consumption, set targets, and track the performance of your building portfolio over time. The portfolio manager software also contains a benchmarking tool, allowing you to score and compare your buildings' energy performance to that of similar-use buildings throughout the country.

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The benchmark score is calculated on a 0 to 100 scale using basic data on your buildings' physical attributes, operating characteristics, and monthly energy consumption. Buildings that score a 75 or higher (indicating performance in the top quartile of the commercial buildings market) and maintain a healthy and productive indoor environment are eligible to receive the ENERGY STAR label. Although portfolio manager can track all building types, benchmarking is currently only available for offices and K-12 schools. Additional space types are in the process of being developed.

One–2–Five is a diagnostic software package to help companies achieve best industry practices in energy management. The tool assists corporations in developing methods to most effectively manage their energy use. The software uses an operational approach to encourage companies to continue to make improvements in their buildings. The tool has a series of yes/no questions and interactively assists organizations in determining the next steps to improve operations and building performance. The software determines the effectiveness as compared to best industry practices on a scale of one to five stars. The tool considers 10 key variables: Leadership, Understanding, Planning, People, Financial Management, Supply Management, Operations and Maintenance, Plant and Equipment, Reporting, and Achievement. The software works with partners to develop customized action steps to focus on areas for improvement.

QuikScope is a financial software package that allocates the costs and benefits of upgrade projects between owners and tenants of a building. This analysis is important for income property owners when determining the effect of upgrades on the appraised value of a building. The tool analyzes the expense sharing aspects of the lease and calculates the cost recovery methods. It then leverages the cost savings into increased Net Operating Income and asset value of the building. This software is available to companies in the ENERGY STAR program.

The following are examples of partners who have successfully implemented energy efficiency upgrades.

Arden Realty

With over 240 properties and 18.5 million square feet, ENERGY STAR 2000 Commercial Real Estate Partner of the Year Arden Realty is the largest commercial office landlord in Southern California. Arden Realty has achieved the ENERGY STAR label for over 30 of their properties. One example is the building at 100 Broadway in Long Beach, California, which achieved a score of 94. This building was constructed in 1986 and has 193,000 rentable square feet with a 94 percent occupancy rate. The property has gone through an overall efficiency enhancement that resulted in the installation of a new energy management system and a building-wide lighting retrofit. The lighting retrofit included upgrades to T-8 lamps, electronic ballasts, LED exit signs, and the installation of occupancy sensors. Consumption was reduced through the use of many no cost and low cost initiatives. Arden noted a marked increase in tenant satisfaction and comfort as a result of these upgrades.

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Phoenix Home Life Insurance

Phoenix Home Life Insurance includes four main facilities in the Northwest ranging in size from 130,000 to 450,000 square feet, for a total of 1.2 million square feet of office space. The organization has embraced ENERGY STAR's five-stage strategic approach to energy efficiency upgrades.

Before undertaking an energy efficiency upgrade project, staff gathers detailed information on the planned project and on how that upgrade will influence other building operating systems. That information is used to develop a Facility Reference Manual which is customized for each facility. The information makes it easier to get approval for upgrades because there is detailed documentation of the potential costs, payback, savings, and results. Through this process, the organization can thoroughly analyze their facilities and identify the most cost-effective opportunities. Phoenix Home Life also has been successful in receiving rebates for some of their energy efficiency improvements. For example, Western Massachusetts Electric's energy conservation program is providing rebates for the lighting and weather-stripping upgrades for their pilot building. Since ENERGY STAR upgrades often coincide with measures that are covered under utility energy conservation programs, partners should regularly contact their utility to take advantage of those programs.

"The ENERGY STAR program has helped heighten our awareness of other vehicles out there to achieve energy efficiency upgrades," says Jeff Royx, program director at Phoenix Home Life Insurance.

Jeff Royx, program director at Phoenix Home Life Insurance commented "The ENERGY STAR program has helped heighten our awareness of other vehicles out there to help achieve energy efficiency upgrades."

"This award is validation that the project goals were very important to our community and have indeed been met," says Neal Travis, president of BellSouth in Alabama. "It is especially important that we reach this standard at a time when our community is suffering from the designation as a non-attainment zone. Pollution prevention may be the most important issue facing Jefferson and Shelby counties at this time."

BellSouth Telecommunications

BellSouth Telecommunications, a partner since 1991, has facilities encompassing approximately 43 million square feet of space across the Southeast. The BellSouth City Center earned the distinction of achieving the first ENERGY STAR label in the State of Alabama on a building. Neal Travis, president of BellSouth Alabama, along with high-ranking city officials, was present when EPA awarded the ENERGY STAR label's plaque to BellSouth. The energy efficiency upgrades were part of an $80 million renovation project which was dedicated in July 1998. BellSouth is now in the process of benchmarking other facilities throughout the state.

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Harwood Management Services

Harwood Management Services' Centex Building in Dallas, Texas achieved an unprecedented ENERGY STAR benchmarking score of 99. Harwood Management Services was recently named ENERGY STAR 2000 Partner of the Year for Commercial Real Estate. Noted architect Richard Keating designed the Centex Building which houses the corporate headquarters for Centex, one of the nation's largest residential home developer and construction contractors. Doug Walker, president of Harwood Management Services points out that the company is committed to energy efficiency as a means to lower operating costs that can increase the return on investment to an owner, while reducing the occupancy cost to the tenant. Constructed in 1996, the building has over 175,000 square feet of office space and an additional 180,000 square foot parking garage.

"The ENERGY STAR program enables critical evaluation of a building's performance in order to achieve these goals," says Doug Walker, president of Harwood Management Services.

Wachovia Bank

Wachovia owns 8.5 million square feet of space, including over 700 offices and 1,200 ATMs located in five states. In 1999, Wachovia Bank was awarded a Modernization Honorable Mention from Buildings Magazine for transforming an abandoned tobacco processing plant into a Class-A office space. Wachovia wanted to design a facility with the lowest total cost including the owning and operating expenses. They also valued the efficiency of equipment over the initial cost and installed a number of energy-efficient technologies in this facility.

The ENERGY STAR program can help your company improve your bottom line through energy efficiency upgrades. For more information, contact your Account Manager or call 1-888-STAR-YES (1-888-782-7937).

[1] "Greening the Building and the Bottom Line/Increasing Productivity through Energy-Efficient Design" by J. Romm and W. Browning; Published by the Rocky Mountain Institute, December 1994

[2] "Does Improving a Firm's Environmental Management System and Environmental Performance Result in a Higher Stock Price?" by Feldman, Soyka, and Ameer, ICF Kaiser International, 1996

[3] EPA publication/Introducing Your Company's Newest Profit Center/January 1997

ENERGY STAR HELPS SAVE WITH UPGRADES

Lighting Upgrades for Tyson Foods

Tyson Foods, the world's largest poultry producer, has recorded one million dollars in savings annually and anticipates saving a total of five million dollars through their implementation of the ENERGY STAR program.

Tyson Foods formed a partnership with Southern Company Energy Solutions (Energy Solutions) in 1996, in an on-going effort to reduce the cost of energy required for their critical operations, while maximizing the operating potential of their 115 facilities in 17 states. The partnership was established when Energy Solutions made a commitment to develop and implement standard lighting equipment, meeting both Tyson's goals and EPA's requirements under the Green Lights Program, throughout Tyson's processing plants.

Terry Easterling inspects the "Green Lights" installed at Tyson Foods' World Headquarters.

Tyson's goal was to effectively reduce lighting costs by 30 percent and to reduce total electrical consumption by two percent. Energy Solutions' involvement consisted of five installations within the Southern Company operating territory. As reward for their efforts, in 1998 the entire contract was granted to Southern Company Energy Solutions, Inc.

Following a walk through audit conducted by Energy Solutions, Tyson received a personalized program designed to provide the company with long term savings. The age and condition of each plant, as well as individual plant requests, were also considered when making assessments of the lighting systems. The conditions of the processing plants are often humid and require constant cleaning. This process can cause extensive damage to sockets and wiring, and the high-pressure water also causes lenses to crack, thus increasing the cost of maintenance. In one operation, a maintenance manager spent $18,000 annually in replacement of closed gasket lenses.

The lighting upgrade successfully provided Tyson with more energy-efficient technologies, such as electronic ballasts, T8 technology, and pulse start metal halides in order to significantly reduce product and maintenance costs. As the new fixtures were added, special stainless conduit and rubber cords were used to protect the

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new electrical system. Lighting repairs in each facility immediately decreased through the lighting upgrade as well as through warranties that covered the materials and ensured manufacturer replacement of all defective materials. Tyson has also implemented the use of "real value" generators in cooperation with their lighting program. These machines burn less coal to increase energy efficiency and do not require as many natural resources to operate, resulting in the avoidance of having to combust 1,280 tons of coal every day.

Jim Doss, Tyson corporate purchasing manager/energy, states:

"After reviewing the recommendations set forth by EPA's ENERGY STAR program, Tyson management made the decision to move forward with the implementation of this program because environmentally, it is the right thing to do."

Tyson displays continuous success in the company's constant efforts to equip all their facilities with lighting upgrades. Today 88 percent of Tyson's facilities, about 30 percent more than necessary to meet the Green Lights criteria, are completely upgraded. Through the ENERGY STAR program, Tyson has also improved working conditions for their employees. Facilities are now cleaner and well lit, resulting in happier workers.

Tyson aggressively moves forward to meet their goal of 100 percent participation. Through these efforts, Tyson has set an example for other industry leaders of the benefits of a complete lighting retrofit program.

YOUTH AND ENVIRONMENTAL AWARENESS

Eco-Schools, Curriculum, Trends

In an age where most Americans try to participate in activities intended to protect the environment, it is important that accurate and sufficient information is available about the environment. The National Alliance for Green Education (NAAGE) is a union of 10 small, independent liberal arts colleges committed to create an educational environment and curriculum that will enlighten the next generation of environmentalists. Studies suggest that the materials used in the United States to teach environmental education courses do not give students enough science and economics for them to adequately understand the complexities of environmental issues. The George C. Marshall Institute's Independent Commission on Environmental Education, a panel of environmental scientists and economists, found that most authors of the materials used in classrooms were neither scientists nor economists. Some of the problems the panel identified were:

- An oversimplification of the complexities that characterize environmental decisions
- Factual errors
- A failure to distinguish between scientific hypotheses and established facts
- Too little instruction in risk or cost-benefit analyses

The panel also found that high school environmental science books were unsophisticated and did not contain enough science-related topics. The information that is often presented is incomplete, simplistic, and even inaccurate.

To alleviate the problem of presenting inadequate scientific materials to students, the NAAGE has devised college curriculums that give students the rare and valuable opportunity to learn from their surrounding environment. Students attending Sterling College in the hills of northern Vermont are offered a land-based education that develops both their academic and environmental interests. All students are required to invest time in the college's working farm and wood lot. Some of their duties include feeding livestock, tending organic gardens, and planting trees. In turn, the farm provides approximately 20 percent of the food consumed at the college. Incoming freshmen are introduced to the academic year with an overnight orientation course in the wilderness. Eight months later, there is a four-day expedition, including a 30-mile hike through the Vermont countryside.

Nearby along the Maine coastline is College of the Atlantic. This college has established a strong commitment to incorporating environmental and social issues into its curriculum. The four-year program customizes an individual program of study that is rewarded with a bachelor's degree in human ecology. There are three main areas that the college concentrates on: environmental sciences (from biology to geology), arts and design (photography to land-use planning), and human studies (philosophy to literature). The strategic location of the campus allows the students easy access to the natural aquatic world. While exploring the campus, it is not unusual to find students working at nearby whale and seabird observation stations, gathering data on animal movements.

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Unity College in Maine is another member of the NAAGE. This 200-acre campus has an abundance of fields and woodlands, and a beautiful view overlooking a lake. The students take advantage of their surroundings by participating in activities such as mountaineering and kayaking. Like Sterling College, Unity engages its freshman class in a five-day wilderness orientation program that requires both traveling by foot as well as by boat. The academic curriculum is comprised of both traditional and self-designed majors with an environmental orientation.

There is obviously more to these eco-colleges than a mere nature walk or a single class in environmental studies. These green colleges encourage their students to take a hands-on approach to their education. The eco-colleges stress the importance of understanding that learning about the environment is not accomplished effectively by just reading a textbook. As a result, students are encouraged to take a break from their books and to expand their learning capabilities by exploring the greener lifestyle around them. Observing animals in their natural habitat and working with vegetation are all part of the environmental learning process. The NAAGE has tapped into the need to educate the next generation on preserving the natural environment. This unique approach to education will ensure that students receive adequate knowledge and hands-on experience in scientific and environmental courses.